

acid neutralised by any alkali, or by phosphate of soda, the fluid becoming more acid when boiled. A solution of earthy phosphates in biphosphate of soda also gives a precipitate on boiling, if some of its acid reaction is removed by any alkali. The fluid when boiled becomes more acid to test-paper, indicating the formation of a more basic earthy phosphate. A result precisely similar is obtained when common phosphate of soda, phosphate of lime, and a little biphosphate of soda exist together in solution; and by varying the quantities of each of these substances, the various phenomena which the urine occasionally presents may be imitated. The time at which the alkalescence of the urine from fixed alkali generally occurs, indicates the existence of some alkaline phosphate, or of some carbonated alkali in the food.

“On the Nerves of the Uterus.” By Thomas S. Beck, Esq. Communicated by Sir Benjamin C. Brodie, Bart., F.R.S.

The object of the author in this communication is to record the results of his dissections of the nerves of the uterus, both in the unimpregnated and gravid states, with a view to determine if any changes are observable in them in these two conditions. He enters minutely into the anatomical details of the formation of the great splanchnic nerve, the composition of the semilunar ganglion, and the distribution of the branches proceeding from it to the different abdominal viscera. His conclusions are, that while the ovaria derive their nerves from the renal, the fallopian tubes from the hypogastric, and the bladder, rectum and vagina from the pelvic plexus, the nerves supplying the uterus are continuations of the hypogastric plexus, and that they undergo, during pregnancy, no further change, either in size or position, except that which is the simple consequence of the enlargement of the organ over which they are distributed, and that they undergo no other change during a second pregnancy. He thinks it probable, moreover, that the vessels of the uterus do not decrease in size after parturition, but are only contracted in their cavity. He notices several points relating to these subjects, which are still open to further investigation. The paper is accompanied by highly finished drawings of the appearance of the dissected parts.

“On a Peculiar Source of Deterioration of the Magnetic Powers of Steel Bars.” By William Sturgeon, Esq. Communicated by S. Hunter Christie, Esq., Sec. R.S.

The author concludes, from various experiments on the changes in the magnetic force of steel magnets produced by subjecting them to blows with a wooden mallet, or other modes of creating tremors or vibrations among their particles, that the most apparently trifling mechanical agitation is sufficient to occasion a considerable diminution of magnetic power; that this loss, when it has taken place from such a cause, is permanent; and that in every case, after reaching a certain point, it attains its maximum, a fact which implies, in every magnet, the possession of a specific retentive force, of which it cannot be deprived by any further mechanical commotion of its parti-

cles. The more highly a bar is magnetized, the more it becomes susceptible of a loss of power by agitation.

“An Account of a Protracting Pocket Sextant.” By Colonel Bainbridge. Communicated by P. M. Roget, M.D., Sec. R.S.

The object of the invention here described is to facilitate and expedite the making of sketches and surveys for military purposes on actual service, and by serving at once as a sextant and protractor, so that as soon as an angle is taken, it may at once be laid down on paper by employing the two legs of the instrument as rulers. A description referring to a diagram is given of this portable sextant.

“Observations on the Growth and Development of the Epidermis.” By Erasmus Wilson, Esq., F.R.S., Lecturer on Anatomy and Physiology in the Middlesex Hospital.

The author adduces evidence derived from his microscopic observations, in confirmation of the commonly received doctrine respecting the origin of the cells of the epidermis and epithelium generally, from the materials furnished by the liquor sanguinis or plasma of the blood; which fluid, passing by endosmosis through the walls of the capillary vessels and peripheral boundary of the surface, develops granules by a vital process, analogous to coagulation. On a careful examination of the inner surface of the epidermis with the aid of the microscope, he finds it to be composed of four kinds of elements, arranged in such a manner as to constitute an irregular plane, similar to a tessellated or mosaic pavement. These elements are,—1. *Granules*, which the author terms *primitive*, of a globular form, solid and apparently homogeneous, and measuring about 1-20,000th part of an inch in diameter. 2. *Aggregated granules*, having about double the diameter of the former and apparently composed of as many of these as can be aggregated together without leaving an unoccupied space in the centre of the mass. 3. *Nucleated granules* measuring in diameter from the 6000th to the 4000th part of an inch, each being composed of an aggregated granule as a nucleus, enveloped by a single layer of aggregated granules, giving to the whole mass an oval or circular, and at the same time flattened shape. Their constituent granules have acquired, during this aggregation, greater density, and are separated from each other by distinct interstitial spaces filled with a transparent homogeneous substance. 4. *Nucleolo-nucleolated* cells pervading the deep stratum of the epidermis, and of which the longer diameter measures from the 3000th to the 2500th part of an inch. These cells, which constitute the principal portion, and may be regarded as the chief constituent of the epidermis, are formed from the nucleolated granules, on the exterior of which there is superposed a transparent layer, bounded by a well-defined outline, by the dark interstitial substance of the wall of the cell; the nucleolated granule being the nucleus, and the aggregated granule the nucleolus of these primitive cells of the epidermis. The author is of opinion that the nuclei, up to a certain point, grow with the cells, by the separation of the original granules from the deposi-